

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) Method for adjusting microstructural properties of a metal produced in an installation for shaping, cooling, and/or heat treatment of the metal, wherein the installation is equipped with actuators for setting specific operating parameters, and the corresponding method process is based on a method model, with which suitable process control and/or process regulation variables for acting on the actuators are determined online with computer assistance after relevant measured values have been detected, comprising the steps of: detecting at least one current actual microstructural characteristic value that provides information about the metal microstructure online at an end of or during a corresponding method process as a relevant measured value; and, depending on the relevant value and using a microstructure model and the method model on which the process is based, exerting an effect on the actuators of the method process in order to adjust desired microstructural properties of the metal, such that the following

can be nondestructively detected as the actual microstructural characteristic value:

- a microstructural grain size value, and/or
- a microstructural transformation time or the microstructural transformation time interval, ~~and/or~~
- ~~the microstructural transformation temperature.~~

2. (Previously presented) Method in accordance with Claim 1, wherein austenitic grain size is determined as the microstructural grain size value for the steel group of a C-Mn steel.

3. (Previously presented) Method in accordance with Claim 1, including detecting a site or the time interval of the beginning and end of the microstructural transformation with several detection units.

4. (Previously presented) Method in accordance with Claim 1, including carrying out online microstructural control out in a cooling line of a wire mill with a water-cooled segment of the cooling line and an air-cooled segment of the cooling line, detecting a current microstructural grain size value of the metal

wire after passage through the water-cooled segment of the cooling line by means of an ultrasonic measuring instrument, and detecting the temperature of a microstructural transformation and a course of the microstructural transformation, with respect to time with temperature measuring devices that can be moved in the direction of conveyance of the metal and/or variably oriented.

5. (Previously presented) Method in accordance with Claim 1, including comparing an actual value and a set value, and if the comparison of the actual value and the set value reveals a difference that exceeds a certain value, carrying out an online adaptation of the method model and/or the microstructure model as a function of the detected value that provides information about the microstructure.

6. (Previously presented) Method in accordance with claim 1, including detecting the microstructural grain size value with ultrasonic or x-ray measuring instruments.

7. (Previously presented) Method in accordance with claim 1, including detecting the microstructural transformation time or the microstructural transformation time interval by detecting linear expansion of the metallic lattice that is associated with

the transformation using measuring instruments that contact the metal.

8. (Previously presented) Method in accordance with claim 7, wherein the measuring instruments are rolling force measuring devices or measuring rollers.

9. (Previously presented) Method in accordance with claim 1, including detecting the microstructural transformation temperature with at least one temperature detection unit, which is movable longitudinally with respect to the direction of metal conveyance and is positioned as a function of the site of the microstructural transformation that is expected based on the microstructure model